

**UNITED STATES DISTRICT COURT  
DISTRICT OF DELAWARE**

CF TRAVERSE LLC,

Plaintiff,

v.

AMPRIUS, INC.,

Defendant.

C.A. NO.

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff CF Traverse LLC (“Traverse”) files this Complaint against Defendant Amprius, Inc. (“Amprius”). Traverse alleges as follows:

**NATURE OF THE ACTION**

1. Traverse brings this patent infringement action to protect its intellectual property and stop Amprius from continuing its wrongful and unlicensed use of Traverse’s patented technologies within and in conjunction with Amprius’ lithium-ion batteries and lithium-ion battery components.

2. Traverse’s patent portfolio includes patents related to lithium-ion battery technology, including, but not limited to, lithium-ion batteries comprising silicon composite anodes.

3. Amprius provides certain products, including but not limited to, lithium-ion batteries and anodes intended for use in lithium-ion batteries. Amprius’ products make use of Traverse’s patented technology and infringe the following United States patents (the “Asserted Patents”):

- a. U.S. Patent No. 8,420,258 (the “’258 patent”), titled “High Capacity Electrodes.”

The '258 patent was duly and legally issued on April 16, 2013. A true and correct copy of the '258 patent is attached hereto as Exhibit A.

- b. U.S. Patent No. 8,652,683 (the "'683 patent"), titled "High Capacity Electrodes."

The '683 patent was duly and legally issued on February 18, 2014. A true and correct copy of the '683 patent is attached hereto as Exhibit B.

- c. U.S. Patent No. 8,658,310 (the "'310 patent"), titled "High Capacity Electrodes."

The '310 patent was duly and legally issued on February 25, 2014. A true and correct copy of the '310 patent is attached hereto as Exhibit C.

- d. U.S. Patent No. 9,431,181 (the "'181 patent"), titled "Energy Storage Devices

Including Silicon and Graphite." The '181 patent was duly and legally issued on August 30, 2016. A true and correct copy of the '181 patent is attached hereto as Exhibit D.

- e. U.S. Patent No. 9,979,017 (the "'017 patent"), titled "Energy Storage Devices."

The '017 patent was duly and legally issued on May 22, 2018. A true and correct copy of the '017 patent is attached hereto as Exhibit E.

- f. U.S. Patent No. 9,412,998 (the "'998 patent"), titled "Energy Storage Devices."

The '998 patent was duly and legally issued on August 9, 2016. A true and correct copy of the '998 patent is attached hereto as Exhibit F.

4. Traverse seeks, *inter alia*, damages in an amount adequate to compensate it for Amprius' infringement, including treble damages based on Amprius' willful infringement of the Asserted Patents, a permanent injunction barring Amprius from continuing to infringe the Asserted Patents, and Traverse's attorneys' fees and costs associated with this action.

### **THE PARTIES**

5. Traverse is a limited liability company organized and existing under the laws of Delaware, with its principal place of business in Sunnyvale, California. Traverse is the owner of a portfolio of dozens of issued patents and pending patent applications protecting innovative advancements in lithium-ion battery technology. Traverse seeks to partner with companies around the world to advance these new and innovative technologies.

6. Amprius is a corporation incorporated under the laws of Delaware, with a principal place of business in Sunnyvale, California. Amprius is engaged in the unlicensed development, manufacture, and sale of lithium-ion batteries and lithium-ion battery components that are protected by Traverse's Asserted Patents.

### **JURISDICTION AND VENUE**

7. This lawsuit is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, and seeking damages, injunctive relief, and other relief as appropriate under 35 U.S.C. § 281, *et seq.* This Court has subject-matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

8. The Court has personal jurisdiction over Amprius because Amprius is incorporated, and therefore domiciled, in the State of Delaware.

9. This Court also has personal jurisdiction over Amprius because, as a domestic corporation, Amprius is registered to do business with the Delaware Department of State Division of Corporations. Amprius has designated Corporate Service Company as its agent for service of process in the State of Delaware. Corporate Service Company is located at 251 Little Falls Drive, Wilmington, Delaware 19808.

10. On information and belief, Amprius regularly and continuously transacts business

in this District, including by selling and distributing batteries in the State of Delaware, either on its own or through affiliates. On information and belief, Amprius has at all relevant times purposefully directed these activities at residents in the State of Delaware, and plans to continue to do so.

11. Venue is proper in this Court under 28 U.S.C. § 1400(b) because Amprius is incorporated in the State of Delaware. Therefore, Amprius “resides” in the State of Delaware for purposes of venue.

### **BACKGROUND OF THE TECHNOLOGY**

12. Lithium-ion batteries operate based on the flow of positively charged lithium ions between two electrodes—a negatively charged anode and a positively charged cathode. When the battery is charged, the lithium ions are stored in the negatively charged anode by a process called “intercalation.” The amount of energy per unit of weight (*e.g.*, gram) that can be stored in a battery, called its “specific capacity,” is proportional to the weight of lithium that can be intercalated into the anode per unit weight of the anode material. In other words, the more lithium that can be stored in the anode, the more energy the battery can hold.

13. Traditionally, lithium-ion batteries have used carbon, in the form of graphite, as the “anode active material”—the material into which the lithium ions are intercalated when the battery is charged. The theoretical specific capacity of graphite is 372 milliamp hours per gram (mAh/g). That is, for each gram of graphite in the anode, 372 milliamp-hours of energy can theoretically be stored in the battery.

14. Today, smaller electronic devices require more energy in less space. And in recent years, there has been significant research and development activity directed towards active materials that can supplement or replace lower capacity graphite anodes.

15. One such active material is silicon. Silicon has a theoretical specific capacity of 4,200 mAh/g, which is more than eleven (11) times greater than the theoretical specific capacity of graphite. Silicon, however, presents certain technical hurdles. For instance, when lithium ions intercalate into a silicon anode, the silicon swells, dramatically increasing the anode's volume. The change in volume causes the anode to "pulverize" itself over the course of charging/discharging cycles, which greatly limits the life of the battery. Researchers have long sought a way to incorporate silicon into the anode active material to take advantage of the increased capacity offered by silicon, while also limiting the damage caused by the dramatic increase in anode volume associated with use of silicon.

16. The Asserted Patents protect innovative breakthroughs in the use of silicon in lithium-ion battery anodes. The Asserted Patents cover, among other things, batteries and anodes for use in lithium-ion batteries that include support filaments (*e.g.*, carbon or other fibers) with an intercalation material (*e.g.*, silicon) disposed on the support filaments. The patents also cover batteries and anodes for use in lithium-ion batteries in which an ion absorbing material, such as silicon, has an over-layer coating the ion absorbing material.

17. Ronald Rojeski is the inventor of multiple patents that relate to energy storage technology, including the Asserted Patents. Mr. Rojeski's innovations in the silicon anode space mark a significant advancement in energy storage technologies and the drive to produce batteries with increased energy density. His use of silicon in combination with nanostructures such as nano-fibers, carbon nano-fibers and carbon nano-tubes dates to 2007, when Mr. Rojeski began developing his silicon anode technology. Since then, Mr. Rojeski has quickly gained recognition as a pioneer in the silicon anode space. His inventions are detailed in fifteen-plus U.S. patents and numerous foreign counterparts, with many applications currently pending.

**FIRST CLAIM FOR RELIEF**

**Infringement of the '258 patent**

18. Traverse incorporates by reference the foregoing paragraphs.
19. Traverse is the owner by assignment of all rights, title, and interest in the '258 patent.
20. The '258 patent is valid and enforceable.
21. Amprius has directly infringed, and is currently infringing, the '258 patent in violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States, without authority, products that practice one or more claims of the '258 patent, including without limitation Amprius' lithium-ion batteries, including SiNW-1400, 4.25V; SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000, 4.4V; ANW3.6-455056; ANW2.6-405056; ANW10-7550106; ANW4.0-455056; ANW8.1-4551107; ANW14.2-8051110; Amprius Very Long Endurance Battery; Amprius CWB and SiNW/NCM622.
22. These batteries infringe at least claim 1 of the '258 patent. The SiNW-1400 battery, for example, is an energy storage system that includes a first electrode disposed in a first region of electrolyte and including a substrate. The SiNW-1400 has a plurality of electron conductive support filaments attached to the substrate, and an ion absorbing material attached to the support filaments that is configured to expand in volume at least 5 percent up to 400 percent when absorbing ions. Further, the SiNW-1400 battery includes a separator configured to separate the first region and a second region of electrolyte, and a second electrode disposed in the second region of electrolyte, the first and second electrodes and separator configured to operate as a rechargeable battery.
23. Amprius has had actual knowledge of the '258 patent since at least July 20, 2018

when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '258 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or including composite anodes containing silicon." Amprius' continued infringement after July 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

24. Traverse has suffered and continues to suffer damages and irreparable harm as a result of Amprius' past and ongoing infringement.

25. Unless Amprius' infringement is permanently enjoined, Traverse will continue to be damaged and irreparably harmed.

## **SECOND CLAIM FOR RELIEF**

### **Infringement of the '683 patent**

26. Traverse incorporates by reference the foregoing paragraphs.

27. Traverse is the owner by assignment of all rights, title, and interest in the '683 patent.

28. The '683 patent is valid and enforceable.

29. Amprius has directly infringed, and is currently infringing, the '683 patent in violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States, without authority, products that practice one or more claims of the '683 patent, including without limitation Amprius' lithium-ion batteries, including SiNW-1400, 4.25V; SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000, 4.4V; ANW3.6-455056; ANW2.6-405056; ANW10-7550106; ANW4.0-455056; ANW8.1-4551107; ANW14.2-8051110; Amprius Very Long Endurance Battery; Amprius CWB and SiNW/NCM622.

30. These batteries infringe at least claim 1 of the '683 patent. The model SiNW-1400, 4.25V battery, for example, is an energy storage system that includes a first electrode disposed in a first region of electrolyte and including a substrate, a plurality of support filaments attached to the substrate, and a conformal ion absorbing material attached to the support filaments that is configured to expand in volume at least 5 percent when absorbing ions. The SiNW-1400, 4.25V battery also includes a separator configured to separate the first region and a second region of electrolyte, and a second electrode disposed in the second region of the electrolyte, with the first and second electrodes and separator configured to operate as a rechargeable battery.

31. Amprius has had actual knowledge of the '683 patent since at least July 20, 2018 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '683 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or including composite anodes containing silicon." Amprius' continued infringement on or after July 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

32. Traverse has suffered and continues to suffer damages and irreparable harm as a result of Amprius' past and ongoing infringement.

33. Unless Amprius' infringement is permanently enjoined, Traverse will continue to be damaged and irreparably harmed.



**THIRD CLAIM FOR RELIEF**

**Infringement of the '310 patent**

34. Traverse incorporates by reference the foregoing paragraphs.

35. Traverse is the owner by assignment of all rights, title, and interest in the '310 patent.

36. The '310 patent is valid and enforceable.

37. Amprius has directly infringed, and is currently infringing, the '310 patent in violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States, without authority, products that practice one or more claims of the '310 patent, including without limitation Amprius' lithium-ion batteries, including models SiNW-1400, 4.25V; SiNW-1600, 4.3V; SiNW-1800, 4.35V; SiNW-2000, 4.4V; ANW3.6-455056; ANW2.6-405056; ANW10-7550106; ANW4.0-455056; ANW8.1-4551107; ANW14.2-8051110; Amprius Very Long Endurance Battery; Amprius CWB and SiNW/NCM622.

38. These batteries infringe at least claim 1 of the '310 patent. The SiNW-1400, 4.25V battery, for example, is a system that includes a first electrode disposed in a first region of electrolyte and including a substrate, a plurality of support filaments attached to the substrate, and a non-particulate ion absorbing material attached to the support filaments that is configured to expand in volume at least 5 percent when absorbing ions. The SiNW-1400, 4.25V battery also includes a separator configured to separate the first region and a second region of electrolyte, and a second electrode disposed in the second region of the electrolyte, with the first and second electrodes and separator configured to operate as a rechargeable battery.

39. Amprius has had actual knowledge of the '310 patent since at least July 20, 2018 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '310

patent, which also indicated Amprius’ “research in and/or manufacture[] [of] products related to or including composite anodes containing silicon.” Amprius’ continued infringement on or after July 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Amprius. Thus, Amprius’ continued infringement as of at least July 20, 2018 is willful and deliberate.

40. Traverse has suffered and continues to suffer damages and irreparable harm as a result of Amprius’ past and ongoing infringement.

41. Unless Amprius’ infringement is permanently enjoined, Traverse will continue to be damaged and irreparably harmed.

#### **FOURTH CLAIM FOR RELIEF**

##### **Infringement of the ’181 patent**

42. Traverse incorporates by reference the foregoing paragraphs.

43. Traverse is the owner by assignment of all rights, title, and interest in the ’181 patent.

44. The ’181 patent is valid and enforceable.

45. Amprius has infringed, and is currently infringing, the ’181 patent in violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States, without authority, products that practice one or more claims of the ’181 patent, including without limitation Amprius’ lithium-ion batteries, including batteries used in Thl 5000 mobile phones (hereinafter, “model Thl 5000 batteries.”)

46. The model Thl 5000 battery infringes at least claim 1 of the ’181 patent. The model Thl 5000 battery is an energy storage system that includes a first electrode disposed in a

first region of an electrolyte, a separator, and a second electrode disposed in a second region of electrolyte. The first electrode of the Thl 5000 battery includes a substrate, an ion absorbing material including silicon attached to the substrate and an over-layer including graphite covering at least part of the silicon. The Thl 5000 battery includes support filaments in contact with the ion absorbing material, where the ion absorbing material covers less than 25% of the support filaments.

47. Amprius has had actual knowledge of the '181 patent since at least July 20, 2018 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '181 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or including composite anodes containing silicon." Amprius' continued infringement on or after July 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

48. Traverse has suffered and continues to suffer damages and irreparable harm as a result of Amprius' past and ongoing infringement.

49. Unless Amprius' infringement is permanently enjoined, Traverse will continue to be damaged and irreparably harmed.

#### **FIFTH CLAIM FOR RELIEF**

##### **Infringement of the '017 patent**

50. Traverse incorporates by reference the foregoing paragraphs.

51. Traverse is the owner by assignment of all rights, title, and interest in the '017 patent.

52. The '017 patent is valid and enforceable.

53. Amprius has directly infringed, and is currently infringing, the '017 patent in violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States, without authority, products that practice one or more claims of the '017 patent, including without limitation Amprius' lithium-ion batteries, including model Thl 5000 batteries.

54. The model Thl 5000 battery infringes at least claim 17 of the '017 patent. The model Thl 5000 battery is an energy storage system that includes a first electrode disposed in a first region of an electrolyte, a separator that separates the first region and a second region of the electrolyte, and a second electrode disposed in the second region of the electrolyte. The first electrode of the Thl 5000 battery includes a substrate. The Thl 5000 battery includes ion absorbing material attached to the substrate and an over-layer including carbon that coats the ion absorbing material.

55. Amprius has had actual knowledge of the '017 patent since at least July 20, 2018 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '017 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or including composite anodes containing silicon." Amprius' continued infringement on or after July 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

56. Traverse has suffered and continues to suffer damages and irreparable harm as a result of Amprius' past and ongoing infringement.

57. Unless Amprius' infringement is permanently enjoined, Traverse will continue to

be damaged and irreparably harmed.

**SIXTH CLAIM FOR RELIEF**

**Infringement of the '998 patent**

58. Traverse incorporates by reference the foregoing paragraphs.

59. Traverse is the owner by assignment of all rights, title, and interest in the '998 patent.

60. The '998 patent is valid and enforceable.

61. Amprius has directly infringed, and is currently infringing, the '998 patent in violation of 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing into the United States, without authority, products that practice one or more claims of the '998 patent, including without limitation Amprius' lithium-ion batteries, including model Thl 5000 batteries.

62. The model Thl 5000 battery infringes at least claim 36 of the '998 patent. The model Thl 5000 battery is an energy storage system that includes an electrode disposed in a first region of electrolyte and including, a substrate, a plurality of support filaments, and an ion absorbing material attached to the support filaments and including silicon, where the ion adsorbing material covers less than 25% of the supporting filaments. The Thl 5000 battery also includes a separator configured to separate the first region and a second region of electrolyte, and a cathode disposed in the second region of electrolyte, with the cathode, anode and separator configured to operate as a rechargeable battery.

63. Amprius has had actual knowledge of the '998 patent since at least July 20, 2018 when Traverse sent Amprius a letter advising Amprius of Traverse's patents, including the '998 patent, which also indicated Amprius' "research in and/or manufacture[] [of] products related to or including composite anodes containing silicon." Amprius' continued infringement on or after

July 20, 2018 is in spite of an objectively high likelihood that its activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Amprius. Thus, Amprius' continued infringement as of July 20, 2018 is willful and deliberate.

64. Traverse has suffered and continues to suffer damages and irreparable harm as a result of Amprius' past and ongoing infringement.

65. Unless Amprius' infringement is permanently enjoined, Traverse will continue to be damaged and irreparably harmed.

### **JURY DEMAND**

Traverse hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

### **REQUEST FOR RELIEF**

Traverse respectfully asks that the Court enter judgment in its favor as follows:

- A. Finding that Amprius has infringed and is infringing each of the Asserted Patents;
- B. Finding that Amprius' infringement of the Asserted Patents has been and continues to be willful;
- C. Finding that each of the Asserted Patents is valid and enforceable;
- D. Awarding Traverse damages adequate to compensate for Amprius' past and present infringement, but in no event less than a reasonable royalty;
- E. Awarding an accounting and supplemental damages for those acts of infringement committed by Amprius subsequent to the discovery cut-off date in this action through the date Final Judgment is entered;
- F. Ordering that damages for infringement of the Asserted Patents be trebled as

provided for by 35 U.S.C. § 284 for Amprius' willful infringement of the  
Asserted Patents;

- G. Finding that this case is exceptional;
- H. Awarding Traverse with its attorneys' fees and costs, together with prejudgment and post-judgment interest;
- I. Permanently enjoining Amprius and its parents, subsidiaries, affiliates, officers, directors, agents, servants, employees, successors and assigns, and all others in active concert or participation with any of the foregoing from any further acts of infringement, including contributing to and/or inducing infringement, of the Asserted Patents, or, in the alternative, an award of a reasonable ongoing royalty for future infringement of the Asserted Patents by such entities; and
- J. Any further relief that this Court deems just and proper.

Dated: July 30, 2019

Respectfully submitted,

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